



EXPRESS MAIL NO. EV064988468US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Stephen V.R. Hellriegel et al.
Application No. : 09/705,369
Filed : November 3, 2000
For : ALIGNMENT MARK FOR PLACEMENT OF GUIDE HOLE

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Examiner : Jeremy C. Norris
Art Unit : 2841
Docket No. : 901115.431
Date : May 21, 2002

Commissioner for Patents
Washington, DC 20231

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AMENDMENT

Commissioner for Patents:

In response to the Office Action dated December 21, 2001, please extend the period of time for response two months, to expire on May 21, 2002. Enclosed are a Petition for an Extension of Time and the requisite fee. Please amend the application as follows:

In the Claims:

Please amend claim 15, as follows:

All currently pending claims are set forth below for the convenience of the

Examiner.

15. (Amended) An electronic connector, comprising:
- a flexible substrate;
 - a plurality of features positioned on said substrate with reference to a first set of registration guides;
 - an additional feature positioned on said substrate with reference to said first set of registration guides;
 - a second set of registration guides positioned on said substrate concurrently with said additional feature; and

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a second additional feature positioned on said substrate with reference to said second set of registration guides.

16. The connector according to claim 15 wherein said plurality of features includes a plurality of electrically conductive traces.

17. The connector according to claim 15 wherein said plurality of features includes a plurality of electrodes.

18. The connector according to claim 17 wherein each of said plurality of electrodes is in electrical contact with a corresponding one of said plurality of electrically conductive traces.

19. The connector according to claim 17 wherein a plurality of micro-pads are positioned on each of said plurality of electrodes.

20. The connector according to claim 19 wherein said plurality of micro-pads comprises said additional feature.

21. The connector according to claim 15 wherein said additional feature and said second set of registration guides are formed by plating a conductive metal on said flexible substrate.

22. the connector according to claim 15 wherein said second additional feature is a plurality of alignment holes.

23. The connector according to claim 15 wherein said concurrent positioning of said additional feature and said second set of registration guides results in a fixed and known positional relationship between the additional feature and the second set of registration guides.

24. The connector according to claim 23 wherein said positioning of said plurality of features with reference to said first set of registration guides results in a positional relationship fixed within known tolerances between any two of said plurality of features.

25. The connector according to claim 24 wherein said positional relationship between said additional feature and said second additional feature is fixed and known with a high degree of confidence as compared to said positional relationship between any two of said plurality of features.

Please add new claims 26-32, as follows:

26. (New) An electronic connector, comprising:
a flexible substrate;
a plurality of electrodes positioned on said substrate with reference to a first set of registration guides,
a first additional feature positioned on said substrate with reference to said first set of registration guides;
a second set of registration guides positioned on said substrate concurrently with said additional feature;
a second additional feature positioned on said substrate with reference to said second set of registration guides; and
a plurality of micro-pads positioned on each of said plurality of electrodes.

27. (New) The connector according to claim 26 wherein said plurality of micro-pads comprises the first additional feature.

28. (New) An electronic connector, comprising:
a flexible substrate;
a first set of registration guides on the flexible substrate;
a plurality of first features positioned on said substrate with reference to the first set of registration guides;

a second feature positioned on said substrate with reference to said first set of registration guides;

a second set of registration guides positioned on said substrate concurrently with said second feature; and

a plurality of alignment holes positioned on said substrate with reference to said second set of registration guides.

29. (New) An electronic connector, comprising:

a flexible substrate;

a first set of registration guides on the flexible substrate;

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a plurality of first features positioned on said substrate with reference to the first set of registration guides;

a second feature positioned on said substrate with reference to said first set of registration guides;

a second set of registration guides positioned on said substrate concurrently with said second feature; and

a plurality of third features positioned on said substrate with reference to said second set of registration guides.

30. (New) A device, comprising:

a flexible substrate, the substrate being divided into a plurality of segments;

a first set of alignment marks on the substrate;

a plurality of features positioned on each of the plurality of segments of the substrate with reference to the first set of alignment marks;

an additional set of alignment marks positioned on each of the plurality of segments with respect to the first set of alignment marks; and

an additional feature positioned on each of the plurality of segments, the additional feature on each segment positioned with respect to the additional set of alignment marks of the respective segment.

31. (New) The device of claim 29 wherein each of the plurality of segments is a flexible connector.

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32. (New) The device of claim 29, further comprising a second additional feature positioned on each of the segments with respect to the additional set of alignment marks of the respective segment.

REMARKS

Claims 15-32 will be pending with entry of the present amendment. Amended claim 15 and new claims 26-32 are submitted herewith.

Applicants thank the Examiner for indicating the allowable matter of claims 19, 20 and 22. Accordingly, new claims 26-32 are submitted, incorporating the matter of claims 19-22 with the matter of the base and intervening claims.

Claim 15 has been amended to correct minor punctuation errors. The scope of claim 1 is not altered by this amendment.

The Examiner has rejected claims 15-18, 21 and 23-25 under 35 USC 103(a) as being unpatentable over Chia et al (US 5,643,835).

With respect to the rejection of claim 15, the applicants respectfully disagree with the Examiner. The Examiner admits, and applicants agree that Chia does not disclose a second set of registration guides positioned on the substrate concurrently with the additional feature. Applicants also agree, and the examiner also admits that there is no teaching in Chia of the second additional feature positioned on the substrate with reference to the second set of registration guides. Thus, there are clearly two features in claim 15 which are distinctly missing from the prior art reference. It was the examiner's position that it would have been obvious, to one having any skill in the art, to include such a second set of registration guides and further, to have a yet additional feature positioned with respect to the second set of registration guides. Applicants strongly disagree. This, indeed, is one of the inventive features which was created by the inventors which had not previously been conceived of, or done in any relevant art. It was the inventors who realized, after considerable study and effort, that additional registration marks could be made simultaneously with some of the features being made on the circuit. Further, that the first set of registration marks could be ignored and the second set of registration marks could be used for forming yet additional features. This is not at all obvious. This is not mere duplication of the essential parts of the device. Instead, the mere duplication of the essential parts of the device would have been, according to the teachings of Chia, to form fourth, fifth and sixth additional features all with the first set of registration marks. In this case, the inventors are

leapfrogging ahead into a new concept of forming structures on the device. Namely, they are using one mask to form other registration guides, and using that same mask to form working features of the device. Then, using a third mask, they are forming further features that piggyback from the second registration guides. and thus, will be assured of having more accurate reference to those features formed concurrently with the second registration guides. Chia does not suggest this nor, would it be obvious to one of any skill in the art. Indeed, what Chia teaches and what would be obvious from the modified invention of Chia is the forming of a number of plurality of electrodes all from the first set of registration guides. as was commonly done in the art as well as additional features. Claim 15 is therefore believed patentable over the art for the reasons which applicants and the examiner all admit are not shown in Chia, the only point of departure being whether such changes would be obvious or not obvious.

Applicants also point out that the only teaching of these two features is in applicant's own invention disclosure. But for applicants' disclosure, which the examiner has read, there would be no knowledge that these two additional features as claimed would be present. For one of skill in the art to take Chia, and extrapolate from them that the two features which applicants claimed, which are only disclosed in applicants' own disclosure would, in fact, be impossible. This is a case of applicants' own invention disclosure being used to teach how the prior art can be applied against themselves. This is impermissible hindsight. It is not reasonable, nor would any one of skill in the art, taking Chia alone, no matter how much study is done come up with the concept of the formation of additional registration marks concurrent with the features on the device to be later used for more features. This is just plain not an obvious extension of Chia and is outside the reasonable skill in the art given the teachings of Chia.

The lack of obviousness is also made clear because two linked features had to be assumed beyond that which is taught in Chia rather than only one feature. The extrapolation of a single feature from the teachings of Chia is difficult enough, however when, once that additional feature is extrapolated then, from the now extrapolated feature yet additional feature is extrapolated from the first extrapolation, this becomes too many steps removed from the original teaching of Chia and outside any reasonable grounds of obviousness.

Certainly, a person of ordinary skill in the art when examining Chia on its face would not have made a first extrapolation and, even if the first extrapolation were made there would be no reason or basis to make a second extrapolation which could only be based on having made the first extrapolation.

The Federal Circuit has continued to teach that the only time an obviousness rejection is made there must be reasonable teaching in the art which would make this obvious. In this case, such obviousness type teaching is completely missing. Applicants respectfully submit that the claim is patentable in light of Chia.

The claim is patentable in light of Chia for yet an additional, further reason. The examiner took the position that the printed circuit board 702 of Chia was analogous to the claimed flexible substrate. Applicants strongly disagree. Chia teaches that the printed circuit board 702 is a rigid, solid circuit board of a type normally used in the art. Certainly, this is not a substrate as can be seen from the teachings of Chia, as will now be described. Chia teaches that the PWB 702 is configured to receive a semiconductor device 700, to be affixed thereto (column 6, lines 57-59). In describing the characteristics of such a semiconductor device, Chia teaches a device comprising a leadframe being "...formed of a conductive foil having a thickness on the order of a few thousandths of an inch, and...leads themselves (having) a width on the order of six thousandths of an inch, or less (column 4, lines 19-23)." Chia continues, "As the lead count of semiconductor devices increases, the leads tend to become thinner, narrower and more closely spaced, and are quite fragile. Aside from problems of damaging the leads during... assembly to a PWB,...it becomes increasingly difficult to maintain alignment of leads with the conductors of wiring patterns on printed circuit boards to which the semiconductor devices are mounted (column 4, lines 32-40)." It is well known in the art that a board intended to receive a semiconductor chip of the type described above must be absolutely rigid. Any flexibility in the board will result in broken leads and failed connections with any chips mounted thereto. Clearly, Chia cannot teach or suggest a flexible substrate, inasmuch as such a feature would render the PWB useless for its intended purpose. Applicants believe that claim 15 is therefore allowable over Chia.

Claims 16-25, as dependent claims to claim 15, are also allowable.

New claims 26-32 are submitted to broaden the claim coverage of the invention, and are fully enabled by the specification. Description of the features claimed begins on page 4, line 5 of the application, and in Figure 15.

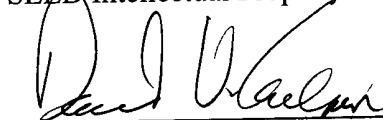
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings to Show Changes Made.**" A complete set of the pending claims are included for the Examiner's convenience.

All of the claims remaining in the application are now clearly allowable.
Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

Stephen V.R. Hellriegel et al.

SEED Intellectual Property Law Group PLLC

A handwritten signature in black ink, appearing to read "David V. Carlson", is written over a horizontal line.

David V. Carlson

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Enclosures:

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